

```

15A0      TITLE 'ASM TABLE SEARCH MODULE'
15A0 C36018 ORG 15A0H
15A3 C38317 JMP ENDMOD ;TO NEXT MODULE
15A6 C31018 JMP BSEAR
          JMP BGET
          ;
          ;
COMMON EQUATES
0078 =    PBMAX EQU 120      ;MAX PRINT SIZE
010C =    PBUFF EQU 10CH     ;PRINT BUFFER
0184 =    PBP EQU PBUFF+PBMAX ;PRINT BUFFER POINTER
          ;
0185 =    TOKEN EQU PBP+1    ;CURRENT TOKEN UDER SCAN
0186 =    VALUE EQU TOKEN+1  ;VALUE OF NUMBER IN BINARY
0188 =    ACCLEN EQU VALUE+2  ;ACCUMULATOR LENGTH
0040 =    ACMAX EQU 64        ;MAX ACCUMULATOR LENGTH
0189 =    ACCUM EQU ACCLEN+1
          ;
01C9 =    EVALUE EQU ACCUM+ACMAX ;VALUE FROM EXPRESSION ANALYSIS
          ;
01CB =    SYTOP EQU EVALUE+2    ;CURRENT SYMBOL TOP
01CD =    SYMAX EQU SYTOP+2     ;MAX ADDRESS+1
          ;
01CF =    PASS EQU SYMAX+2     ;CURRENT PASS NUMBER
01D0 =    FPC EQU PASS+1       ;FILL ADDRESS FOR NEXT HEX BYTE
01D2 =    ASPC EQU FPC+2       ;ASSEMBLER'S PSEUDO PC
          ;
GLOBAL EQUATES
0001 =    IDEN EQU 1           ;IDENTIFIER
0002 =    NUMB EQU 2           ;NUMBER
0003 =    STRNG EQU 3          ;STRING
0004 =    SPECL EQU 4          ;SPECIAL CHARACTER
          ;
0001 =    PLABT EQU 0001B      ;PROGRAM LABEL
0002 =    DLABT EQU 0010B      ;DATA LABEL
0004 =    EQUT EQU 0100B       ;EQUATE
0005 =    SETT EQU 0101B       ;SET
0006 =    MACT EQU 0110B       ;MACRO
          ;
0008 =    EXTT EQU 1000B       ;EXTERNAL
000B =    REFT EQU 1011B       ;REFER
000C =    GLBT EQU 1100B       ;GLOBAL
          ;
          ;
000D =    CR EQU 0DH           ;CARRIAGE RETURN
          ;
          ;
TABLE DEFINITIONS
          ;
TYPES
0000 =    XBASE EQU 0          ;START OF OPERATORS
          ;
0010 =    RT EQU 16            ;01 THROUGH 015 DENOTE OPERATIONS
0011 =    PT EQU RT+1          ;RT IS REGISTER TYPE, PT IS PSEUDO OPERATION
0012 =    OBASE EQU PT+1
0013 =    O1 EQU OBASE+1      ;SIMPLE
0014 =    O2 EQU OBASE+2      ;LXI

```

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```

0015 =      03      EQU      OBASE+3 ;DAD
0016 =      04      EQU      OBASE+4 ;PUSH/POP
0017 =      05      EQU      OBASE+5 ;JMP/CALL
0018 =      06      EQU      OBASE+6 ;MOV
0019 =      07      EQU      OBASE+7 ;MVI
001A =      08      EQU      OBASE+8 ;ACC IMMEDIATE
001B =      09      EQU      OBASE+9 ;LDAX/STAX
001C =      010     EQU      OBASE+10      ;LHLD/SHLD/LDA/STA
001D =      011     EQU      OBASE+11      ;ACCUM REGISTER
001E =      012     EQU      OBASE+12      ;INC/DEC
001F =      013     EQU      OBASE+13      ;INX/DCX
0020 =      014     EQU      OBASE+14      ;RST
0021 =      015     EQU      OBASE+15      ;IN/OUT

```

;

;

X1 THROUGH X15 DENOTE OPERATORS

```

0000 =      X1      EQU      XBASE      ;*
0001 =      X2      EQU      XBASE+1    ;/
0002 =      X3      EQU      XBASE+2    ;MOD
0003 =      X4      EQU      XBASE+3    ;SHL
0004 =      X5      EQU      XBASE+4    ;SHR
0005 =      X6      EQU      XBASE+5    ;+
0006 =      X7      EQU      XBASE+6    ;-
0007 =      X8      EQU      XBASE+7    ;UNARY -
0008 =      X9      EQU      XBASE+8    ;NOT
0009 =      X10     EQU      XBASE+9    ;AND
000A =      X11     EQU      XBASE+10   ;OR
000B =      X12     EQU      XBASE+11   ;XOR
000C =      X13     EQU      XBASE+12   ;(
000D =      X14     EQU      XBASE+13   ;)
000E =      X15     EQU      XBASE+14   ;,
000F =      X16     EQU      XBASE+15   ;CR

```

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;

RESERVED WORD TABLES

BASE ADDRESS VECTOR FOR CHARACTERS

```

15A9 C415      CINX:  DW      CHAR1      ;LENGTH 1 BASE
15AB D415      DW      CHAR2      ;LENGTH 2 BASE
15AD E615      DW      CHAR3      ;LENGTH 3 BASE
15AF 8216      DW      CHAR4      ;LENGTH 4 BASE
15B1 AE16      DW      CHAR5      ;LENGTH 5 BASE
15B3 BD16      DW      CHAR6      ;LENGTH 6 BASE

```

;

```

0005 =      CMAX      EQU      ($-CINX)/2-1      ;LARGEST STRING TO MATCH

```

;

```

      CLEN:      ;LENGTH VECTOR GIVES THE NUMBER OF ITEMS IN EACH TABLE

```

```

15B5 10      DB      CHAR2-CHAR1
15B6 09      DB      (CHAR3-CHAR2)/2
15B7 34      DB      (CHAR4-CHAR3)/3
15B8 0B      DB      (CHAR5-CHAR4)/4
15B9 03      DB      (CHAR6-CHAR5)/5

```

;

```

      TVINX:      ;TABLE OF TYPE,VALUE PAIRS FOR EACH RESERVED SYMBOL

```

```

15BA BD16      DW      TV1

```

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15BC	DD16	DW	TV2
15BE	EF16	DW	TV3
15C0	5717	DW	TV4
15C2	6D17	DW	TV5

CHARACTER VECTORS FOR 1,2,3,4, AND 5 CHARACTER NAMES

15C4	0D28292A	CHAR1:	DB	CR, '()*'
15C8	2B		DB	'+'
15C9	2C2D2F41		DB	'-/A'
15CD	42434445		DB	'BCDE'
15D1	484C4D		DB	'HLM'

15D4	4442444944	CHAR2:	DB	'DBDIDSDW'
15DC	4549494649		DB	'EIIFINOR'
15E4	5350		DB	'SP'

15E6	4143494144	CHAR3:	DB	'ACIADCADDADI'
15F2	414E41414E		DB	'ANAANDANICMA'
15FE	434D43434D		DB	'CMCCMPCPIDAA'
160A	4441444443		DB	'DADDCRDCXEND'
1616	455155484C		DB	'EQUHLTINRINX'
1622	4A4D504C44		DB	'JMPDLALXIMOD'
162E	4D4F564D56		DB	'MOVVMVINOPNOT'
163A	4F52414F52		DB	'ORAORGORIOUT'
1646	504F505053		DB	'POPPSWRALRAR'
1652	524554524C		DB	'RETRLCRRCRST'
165E	5342425342		DB	'SBBSBISETSHL'
166A	5348525354		DB	'SHRSTASTCSUB'
1676	535549584F		DB	'SUIXORXRAXRI'

1682	43414C4C45	CHAR4:	DB	'CALLENDMLDAXLHLDPCHL'
1696	5055534853		DB	'PUSHSHLDSPHLSTAX'
16A6	5843484758		DB	'XCHGXTHL'

16AE	454E444946	CHAR5:	DB	'ENDIFMACROTITLE'
------	------------	--------	----	-------------------

CHAR6: ;END OF CHARACTER VECTOR

TV1: ;TYPE,VALUE PAIRS FOR CHAR1 VECTOR

16BD	0FOA0C14	DB	X16,10,	X13,20	;CR (
16C1	0D1E0050	DB	X14,30,	X1,80	;)*
16C5	0546	DB	X6,70		;+
16C7	0EOA0646	DB	X15,10,	X7,70	;,-
16CB	01501007	DB	X2,80,	RT,7	; / A
16CF	10001001	DB	RT,0,	RT,1	;B C
16D3	10021003	DB	RT,2,	RT,3	;D E
16D7	10041005	DB	RT,4,	RT,5	;H L
16DB	1006	DB	RT,6		;M

TV2: ;TYPE,VALUE PAIRS FOR CHAR2 VECTOR

16DD	110113F3	DB	PT,1,	O1,OF3H	;DB DI
16E1	11021103	DB	PT,2,	PT,3	;DS DW
16E5	13FB1108	DB	O1,OFBH,	PT,8	;EI IF
16E9	21DB0A28	DB	O15,0DBH,	X11,40	;IN OR
16ED	1006	DB	RT,6		;SP

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```

;
TV3:  ;TYPE,VALUE PAIRS FOR CHAR3 VECTOR
16EF 1ACE1D88 DB 08,0CEH, 011,88H ;ACI ADC
16F3 1D801AC6 DB 011,80H, 08,0C6H ;ADD ADI
16F7 1DA00932 DB 011,0A0H, X10,50 ;ANA AND
16FB 1AE6132F DB 08,0E6H, 01,2FH ;ANI CMA
16FF 133F1DB8 DB 01,3FH, 011,0B8H ;CMC CMP
1703 1AFE1327 DB 08,0FEH, 01,27H ;CPI DAA
1707 15091E05 DB 03,09H, 012,05H ;DAD DCR
170B 1F0B1104 DB 013,0BH, PT,4 ;DCX END
170F 11071376 DB PT,7, 01,76H ;EQU HLT
1713 1E041F03 DB 012,04H, 013,03H ;INR INX
1717 17C31C3A DB 05,0C3H, 010,3AH ;JMP LDA
171B 14010250 DB 02,01H, X3,80 ;LXI MOD
171F 18401906 DB 06,40H, 07,06H ;MOV MVI
1723 1300083C DB 01,00H, X9,60 ;NOP NOT
1727 1DB0110A DB 011,0B0H, PT,10 ;ORA ORG
172B 1AF621D3 DB 08,0F6H, 015,0D3H ;ORI OUT
172F 16C11006 DB 04,0C1H, RT,6 ;POP PSW
1733 1317131F DB 01,17H, 01,1FH ;RAL RAR
1737 13C91307 DB 01,0C9H, 01,07H ;RET RLC
173B 130F20C7 DB 01,0FH, 014,0C7H ;RRC RST
173F 1D981ADE DB 011,098H, 08,0DEH ;SBB SBI
1743 110B0350 DB PT,11, X4,80 ;SET SHL
1747 04501C32 DB X5,80, 010,32H ;STA STC
174B 13371D90 DB 01,37H, 011,90H ;STC SUB
174F 1AD60B28 DB 08,0D6H, X12,40 ;SUI XOR
1753 1DA81AEE DB 011,0A8H, 08,0EEH ;XRA XRI

```

```

;
TV4:  ;TYPE,VALUE PAIRS FOR CHAR4 VECTOR
1757 17CD DB 05,0CDH ;CALL
1759 11061B0A DB PT,6, 09,0AH ;ENDM LDAX
175D 1C2A13E9 DB 010,02AH, 01,0E9H ;LHLD PCHL
1761 16C51C22 DB 04,0C5H, 010,22H ;PUSH SHLD
1765 13F91B02 DB 01,0F9H, 09,02H ;SPHL STAX
1769 13EB13E3 DB 01,0EBH, 01,0E3H ;XCHG XTHL

```

```

;
TV5:  ;TYPE,VALUE PAIRS FOR CHAR5 VECTOR
176D 11051109 DB PT,5, PT,9 ;ENDIF MACRO
1771 110C DB PT,12 ;TITLE

```

```

;
SUFTAB: ;TABLE OF SUFFIXES FOR J C AND R OPERATIONS
1773 4E5A5A204E DB 'NZZ NCC POPEP M '

```

```

;
BSEAR: ;BINARY SEARCH MNEMONIC TABLE
;
; INPUT: UR = UPPER BOUND OF TABLE (I.E., TABLE LENGTH-1)
;         SR = SIZE OF EACH TABLE ELEMENT
;         H,L ADDRESS BASE OF TABLE TO SEARCH
;
; OUTPUT: ZERO FLAG INDICATES MATCH WAS FOUND. IN WHICH CASE
;         THE ACCUMULATOR CONTAINS AN INDEX TO THE ELEMENT
;         NOT ZERO FLAG INDICATES NO MATCH FOUND IN TABLE

```

```

0000 = UR EQU B ;UPPER BOUND REGISTER
0001 = LR EQU C ;LOWER BOUND REGISTER
0002 = SR EQU D ;SIZE REGISTER

```

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```

0003 =      MR      EQU      E      ;MIDDLE POINTER REGISTER
0000 =      SP1     EQU      B      ;SIZE PRIME, USED IN COMPUTING MIDDLE POSITON
0001 =      SP1P    EQU      C      ;ANOTHER COPY OF SIZE PRIME
0004 =      KR      EQU      H      ;K
;
1783 1EFF      MVI      MR,255      ;MARK M <> OLD M
1785 04        INR      UR          ;U=U+1
1786 0E00      MVI      LR,0        ;L = 0
;
;
;      COMPUTE M' = (U+L)/2
1788 AF      NEXT:  XRA      A
1789 78        MOV      A,UR        ;CY=0, A=U
178A 81        ADD      LR          ;(U+L)
178B 1F        RAR          ;(U+L)/2
178C BB        CMP      MR          ;SAME AS LAST TIME THROUGH?
178D CAC417     JZ       NMATCH      ;JUMP IF = TO NO MATCH
;
;      MORE ELEMENTS TO SCAN
1790 5F        MOV      MR,A        ;NEW MIDDLE VALUE
1791 E5        PUSH     H          ;SAVE A COPY OF THE BASE ADDRESS
1792 D5        PUSH     D          ;SAVE S,M
1793 C5        PUSH     B          ;SAVE U,L
1794 E5        PUSH     H          ;SAVE ANOTHER COPY OF THE BASE ADDRESS
1795 42        MOV      SP1,SR      ;S' = S
1796 48        MOV      SP1P,SP1    ;S'' = S'
1797 1600      MVI      SR,0        ;FOR DOUBLE ADD OPERATION BELOW (DOUBLE M)
;
;
1799 210000     LXI      KR,0        ;K=0
179C 19      SUMK:  DAD      D        ;K = K + M
179D 05        DCR      SP1         ;S' = S' - 1
179E C29C17     JNZ      SUMK        ;DECREMENT IF SP1. <> 0
;
;      K IS NOW RELATIVE BYTE POSITION
17A1 D1        POP      D          ;TABLE BASE ADDRESS
17A2 19        DAD      D          ;H,L CONTAINS ABSOLUTE ADDRESS OF BYTE TO COMPA
17A3 118901     LXI      D,ACCUM    ;D,E ADDRESS CHARACTERS TO COMPARE
;
;      COMK: ;COMPARE NEXT CHARACTER
17A6 1A        LDAX     D          ;ACCUM CHARACTER TO REG A
17A7 BE        CMP      M          ;SAME AS TABLE ENTRY?
17A8 13        INX      D
17A9 23        INX      H          ;TO NEXT POSITIONS
17AA C2B617     JNZ      NCOM       ;JUMP IF NOT THE SAME
17AD 0D        DCR      SP1P       ;MORE CHARACTERS?
17AE C2A617     JNZ      COMK
;
;      COMPLETE MATCH AT M
17B1 C1        POP      B
17B2 D1        POP      D          ;M RESTORED
17B3 E1        POP      H
17B4 7B        MOV      A,MR       ;VALUE OF M COPIED IN A
17B5 C9        RET              ;WITH ZERO FLAG SET
;
;      NCOM: ;NO MATCH, DETERMINE IF LESS OR GREATER
17B6 C1        POP      B          ;U,L
17B7 D1        POP      D          ;S,M

```

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```

17B8 E1          POP      H          ;TABLE ADDRESS
17B9 DAC017      JC       NCOML
;               ACCUM IS HIGHER
17BC 4B          MOV      LR,MR      ;L = M
17BD C38817      JMP      NEXT
;
;NCOML:          ;ACCUMULATOR IS LOW
17C0 43          MOV      UR,MR      ;U = M
17C1 C38817      JMP      NEXT
;
;NMATCH:         ;NO MATCH
17C4 AF          XRA       A
17C5 3C          INR      A          ;SETS NOT ZERO FLAG
17C6 C9          RET
;
;PREFIX:         ;J C OR R PREFIX?
17C7 3A8901      LDA       ACCUM
17CA 0117C2      LXI       B,(0C2H SHL 8) OR 05      ;JNZ OPCODE TO B, TYPE TO C
17CD FE4A        CPI       'J'
17CF C8          RZ          ;RETURN WITH ZERO FLAG SET IF J
17D0 06C4        MVI       B,0C4H      ;CNZ OPCODE TO B, TYPE IS IN C
17D2 FE43        CPI       'C'
17D4 C8          RZ
17D5 0113C0      LXI       B,(0C0H SHL 8) OR 01      ;RNZ OPCODE
17D8 FE52        CPI       'R'
17DA C9          RET
;
;SUFFIX:         ;J R OR C RECOGNIZED, LOOK FOR SUFFIX
17DB 3A8801      LDA       ACCLEN
17DE FE04        CPI       4          ;CHECK LENGTH
17E0 D20D18      JNC       NSUFF      ;CARRY IF 0,1,2,3 IN LENGTH
17E3 FE03        CPI       3
17E5 CAF217      JZ        SUFO       ;ASSUME 1 OR 2 IF NO BRANCH
17E8 FE02        CPI       2
17EA C20D18      JNZ       NSUFF      ;RETURNS IF 0 OR 1
17ED 218B01      LXI       H,ACCUM+2
17F0 3620        MVI       M,' '      ;BLANK-OUT FOR MATCH ATTEMPT
;SUF0:          ;SEARCH 'TIL END OF TABLE
17F2 010800      LXI       B,8        ;B=0, C=8 COUNTS TABLE DOWN TO ZERO OR MATCH
17F5 117317      LXI       D,SUFTAB
;NEXTS:         ;LOOK AT NEXT SUFFIX
17F8 218A01      LXI       H,ACCUM+1      ;SUFFIX POSITION
17FB 1A          LDAX      D          ;CHARACTER TO ACCUM
17FC BE          CMP      M
17FD 13          INX       D          ;READY FOR NEXT CHARACTER
17FE C20518      JNZ       NEXTO      ;JMP IF NO MATCH
1801 1A          LDAX      D          ;GET NEXT CHARACTER
1802 23          INX       H          ;READY FOR COMPARE WITH ACCUM
1803 BE          CMP      M          ;SAME?
1804 C8          RZ          ;RETURN WITH ZERO FLAG SET, B IS SUFIX
1805 13          NEXTO: INX       D          ;MOVE TO NEXT CHARACTER
1806 04          INR      B          ;COUNT SUFFIX UP
1807 0D          DCR      C          ;COUNT TABLE LENGTH DOWN
1808 C2F817      JNZ       NEXTS
;               END OF TABLE, MARK WITH NON ZERO FLAG
180B 0C          INR      C

```

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180C C9

RET

;

NSUFF: ;NOT PROPER SUFFIX - SET NON ZERO FLAG

180D AF

XRA A

180E 3C

INR A

180F C9

RET

;

BGET: ;PERFORM BINARY SEARCH, AND EXTRACT TYPE AND VAL FIELDS FOR

; THE ITEM. ZERO FLAG INDICATES MATCH WAS FOUND, WITH TYPE

; IN THE ACCUMULATOR, AND VAL IN REGISTER B. THE SEARCH IS BASED

; UPON THE LENGTH OF THE ACCUMULATOR

1810 3A8801

LDA ACCLEN ;ITEM LENGTH

1813 4F

MOV C,A ;SAVE A COPY

1814 3D

DCR A ;ACCLEN-1

1815 5F

MOV E,A

1816 1600

MVI D,0 ;DOUBLE ACCLEN-1 TO D,E

1818 D5

PUSH D ;SAVE A COPY FOR LATER

1819 FE05

CPI CMAX ;TOO LONG?

181B D25A18

JNC NGET ;NOT IN RANGE IF CARRY

181E 21B515

LXI H,CLEN ;LENGTH VECTOR

1821 19

DAD D

1822 46

MOV UR,M ;FILL UPPER BOUND FROM MEMORY

1823 21A915

LXI H,CINX

1826 19

DAD D

1827 19

DAD D ;BASE ADDRESS TO H,L

1828 56

MOV D,M

1829 23

INX H

182A 66

MOV H,M

182B 6A

MOV L,D ;NOW IN H,L

182C 51

MOV SR,C ;FILL THE SIZE REGISTER

182D CD8317

CALL BSEAR ;PERFORM THE BINARY SEARCH

1830 C24518

JNZ SCASE ;ZERO IF FOUND

1833 D1

POP D ;RESTORE INDEX

1834 21BA15

LXI H,TVINX

1837 19

DAD D

1838 19

DAD D ;ADDRESSING PROPER TV ELEMENT

1839 5E

MOV E,M

183A 23

INX H

183B 56

MOV D,M

; D,E IS BASE ADDRESS OF TYPE/VALUE VECTOR, ADD DISPLACEMENT

183C 6F

MOV L,A

183D 2600

MVI H,0

183F 29

DAD H ;DOUBLED

1840 19

DAD D ;INDEXED

1841 7E

MOV A,M ;TYPE TO ACC

1842 23

INX H

1843 46

MOV B,M ;VALUE TO B

1844 C9

RET ;TYPE IN ACC, VALUE IN B

;

SCASE: ;NAME NOT TOO LONG, BUT NOT FOUND IN TABLES, MAY BE J C OR R

1845 D1

POP D ;RESTORE INDEX

1846 CDC717

CALL PREFIX

1849 C0

RNZ ;NOT FOUND AS PREFIX J C OR R IF NOT ZERO FLAG

184A C5

PUSH B ;SAVE VALUE AND TYPE

184B CDDb17

CALL SUFFIX ;ZERO IF SUFFIX MATCHED

184E 78

MOV A,B ;READY FOR MASK IF ZERO FLAG

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```
184F CT      POP      B          ;RECALL VALUE AND TYPE
1850 CO      RNZ          ;RETURN IF NOT ZERO FLAG SET
              ; MASK IN THE PROPER BITS AND RETURN
1851 B7      ORA      A          ;CLEAR CARRY
1852 17      RAL
1853 17      RAL
1854 17      RAL
1855 B0      ORA      B          ;VALUE SET TO JNZ ...
1856 47      MOV      B,A        ;REPLACE
1857 79      MOV      A,C        ;RETURN WITH TYPE IN REGISTER A
1858 BF      CMP      A          ;CLEAR THE ZERO FLAG
1859 C9      RET

              ;
NGET:        ;CAN'T FIND THE ENTRY, RETURN WITH ZERO FLAG RESET
185A D1      POP      D          ;GET THE ELEMENT BACK
185B AF      XRA      A          ;CLEAR
185C 3C      INR      A          ;ZERO FLAG RESET
185D C9      RET

              ;
              ;
1860 =      ENDMOD EQU      ($ AND OFFEOH) + 20H ;NEXT MODULE ADDRESS
185E      END
```

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0188 ACCLN	0189 ACCUM	0040 ACMAX	01D2 ASPC	1810 BGET
1783 BSEAR	15C4 CHAR1	15D4 CHAR2	15E6 CHAR3	1682 CHAR4
16AE CHAR5	16BD CHAR6	15A9 C1NX	15B5 CLEN	0005 CMAX
17A6 COMK	000D CR	0002 DLABT	1860 ENDMOD	0004 EQUT
01C9 EVALUE	0008 EXTT	01D0 FPC	000C GLBT	0001 IDEN
0004 KR	0001 LR	0006 MACT	0003 MR	17B6 NCOM
17C0 NCOML	1788 NEXT	1805 NEXT0	17F8 NEXTS	185A NGET
17C4 NMATCH	180D NSUFF	0002 NUMB	0013 01	001C 010
001D 011	001E 012	001F 013	0020 014	0021 015
0014 02	0015 03	0016 04	0017 05	0018 06
0019 07	001A 08	001B 09	0012 OBASE	01CF PASS
0078 PBMAX	0184 PBP	010C PBUFF	0001 PLABT	17C7 PREFIX
0011 PT	000B REFT	0010 RT	1845 SCASE	0005 SETT
0000 SP1	0001 SP1P	0004 SPECL	0002 SR	0003 STRNG
17F2 SUFO	17DB SUFFIX	1773 SUFTAB	179C SUMK	01CD SYMAX
01CB SYTOP	0185 TOKEN	16BD TV1	16DD TV2	16EF TV3
1757 TV4	176D TV5	15BA TVINX	0000 UR	0186 VALUE
0000 X1	0009 X10	000A X11	000B X12	000C X13
000D X14	000E X15	000F X16	0001 X2	0002 X3
0003 X4	0004 X5	0005 X6	0006 X7	0007 X8
0008 X9	0000 XBASE			

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